New Brunswick

Most N.B. schools that tested high for CO2 still lack proper ventilation, data reveals

No 'immediate danger,' says province, but epidemiologist calls results a 'public health crisis'

Bobbi-Jean MacKinnon · CBC News · Posted: Apr 14, 2023 7:12 AM EDT | Last Updated: April 14

New Brunswick has set 1,500 parts per million as the 'desirable' peak carbon dioxide level for schools. (Ben Nelms/Radio-Canada)

Thirty of 37 New Brunswick schools that had peak carbon dioxide readings above the "desirable" level during air quality testing more than a year ago still lack proper ventilation systems, data quietly released by the Department of Education reveals.

Among them is a school that had a peak more than double the targeted maximum of 1,500 parts per million, and another that also had an overall average above that peak limit.

Carbon dioxide, or CO2, is commonly created indoors when people exhale. It's used as a proxy to measure air quality and the rate at which air is being renewed, which can contribute to the transmission of COVID-19 and other respiratory illnesses, according to experts.

Infection control epidemiologist Colin Furness contends carbon dioxide levels should be kept below 800 to 1,000 ppm and describes the test results as a "public health crisis."

"Let's be clear, the CO2 readings are a measure of how much of other people's exhalations you are breathing in. And I just, you know, I really want the 'ick' factor to sink in," he said.

"This is not what we should have anywhere — particularly schools. ... What could be more important than child health?"

No firm timeline for new ventilation systems

The Department of Education conducted tests during the winter of 2021-22 at 51 schools without proper ventilation systems, which had peak carbon dioxide readings above 1,500 parts per million the previous year.

Of the 37 schools with elevated levels, seven got new mechanical ventilation systems installed last year and another 11 are slated to for the upcoming school year, according to department spokesperson Morgan Bell.

That includes Moncton Middle School, which houses about 300 students in

That includes Marshview Middle School, which houses about 300 students in grades 5 to 8 in Sackville and had the highest peak reading of all the schools, at 3,914 ppm.

Bell said the 11 projects are all expected to be completed this year.

The other 19 schools, such as Lord Beaverbrook Elementary, a K-4 school in Campbellton, which had a peak level of 2,107 ppm, and an average reading of 1,509.8, are not currently scheduled to get new systems.

New Brunswick currently has 54 schools without proper ventilation systems after 10 schools were upgraded last year. (Ivanoh Demers/Radio-Canada)

One room at Lord Beaverbrook that wasn't connected to the school's existing ventilation system has since been connected, said Bell.

A new school is scheduled to replace Lord Beaverbrook in September 2026, she said.

Schools without a mechanical ventilation system continue to use portable air filtration devices with high-efficiency particulate air (HEPA) filters.

Schools cannot accept donations of HEPA systems, filters or homemade air purifier systems, known as Corsi-Rosenthal boxes, Bell confirmed.

"Air purification systems are designed for the specific space and installed by professionals," she said.

Homemade equipment would not meet the strict safety standards, such as electrical, said Anglophone School District South spokesperson Jessica Hanlon.

No 'immediate danger'

Although the department provided CBC News with some of the key test results in February, the detailed findings, including the peaks and averages for individual schools, were only posted online last week.

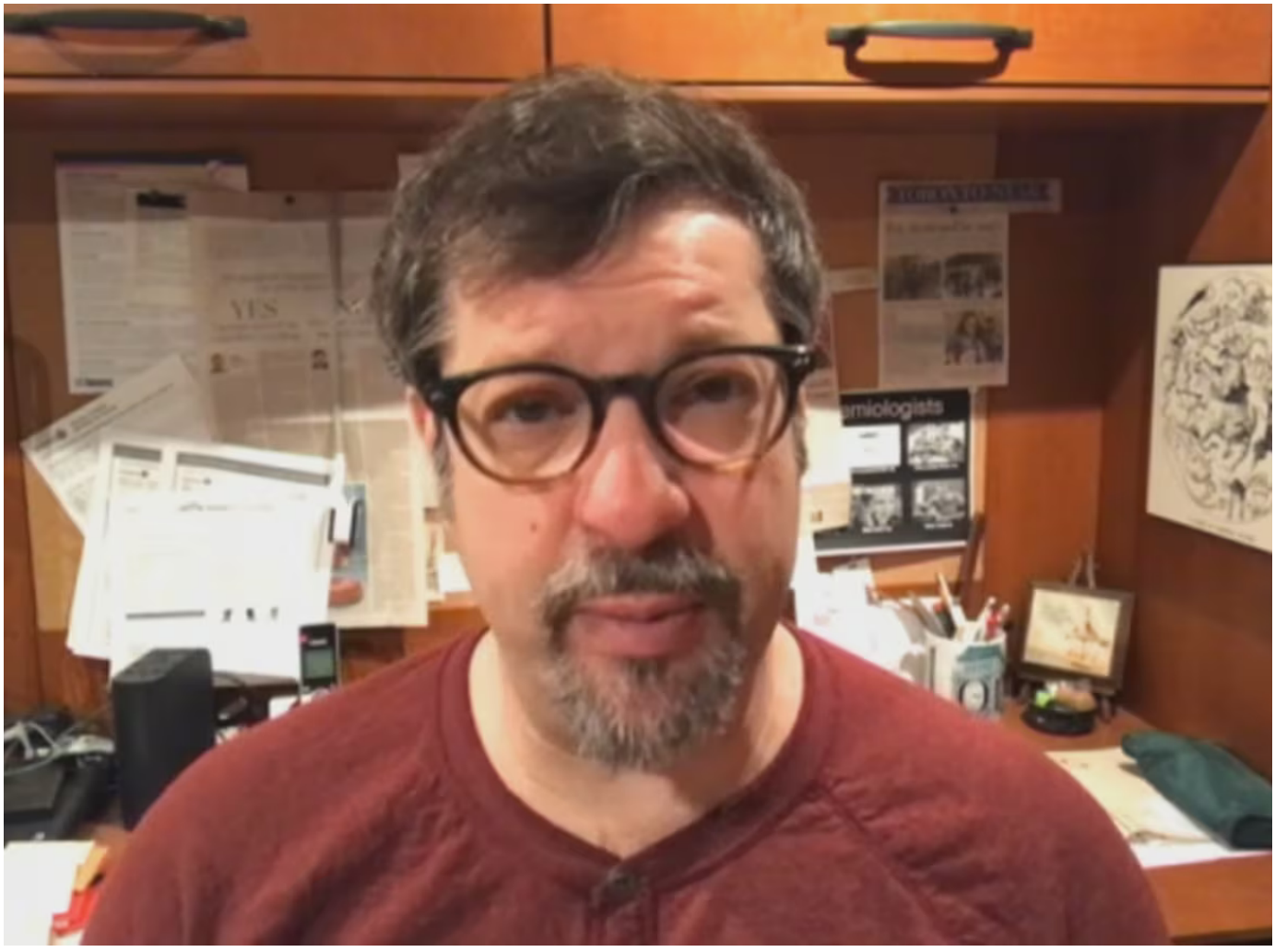
"Testing completed so far has not indicated an immediate danger to occupants," said Bell.

> In the lab, COVID is a Level 3 biohazard. In schools, it's no big deal. I don't think you can reconcile those two statements.
>
> *- Colin Furness, infection control epidemiologist*

The department has previously described CO2 levels above 1,500 ppm as "less than optimal for learning."

Elevated levels for a sustained period of time can increase fatigue and decrease attention spans, Bell has said.

But "CO2 exposure does not pose a health risk unless the exposure is at a level of 5,000 ppm over an eight-hour period weighted average or 30,000 ppm over a [15]-minute period weighted average," she said in an emailed statement.



Colin Furness, an infection control epidemiologist, said carbon dioxide levels should be tested in all areas of schools, including classrooms, hallways and cafeterias, and the department should figure out room by room what it can do easily and cheaply to move fresh air into each room. (CBC)

The more exhaled air people breathe in, the higher the risk they'll also breathe in any viruses and bacteria, according to Furness, an assistant professor at the University of Toronto.

"In the lab, COVID is a Level 3 biohazard. In schools, it's no big deal. I don't think you can reconcile those two statements," he said.

Were parents, teachers informed?

Asked whether parents, teachers and staff were informed of the 2021-22 air quality results, Bell said they're now available online.

"Districts are responsible for passing this information along," she said.

Forty-nine of the 51 schools tested are in the anglophone sector. Of the four anglophone school districts, only Anglophone South responded to a request for information.

Of its 14 schools tested, eight had peak CO2 levels above 1,500 ppm, including Norton Elementary. The K-5 school with about 130 students had a peak reading of 2,493 pmm as well as an elevated average of 1,799.9 ppm.

The department installed 2,000 portable HEPA systems in classrooms of the schools that lack a ventilation system in January 2022. (Evan Mitsui/CBC)

The district spokesperson Hanlon did not say if, when or how parents, teachers and staff were informed of the results.

"Indoor air quality tests to-date do not indicate any risk to the health or safety of an individual," she said in an emailed statement.

Hanlon said the Department of Education chooses which schools will get new ventilation systems.

In Anglophone South, these schools are Blacks Harbour, Sir James Dunn Academy and St. George Elementary.

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Francophone School District South shared the air quality results for its two schools tested at the district education council meeting in January 2022, said spokesperson Jean-Luc Thériault, noting those meetings are open to the public.

"The CO2 level was a little higher in some rooms of École Blanche-Bourgeois than

in other schools," said Thériault. It had a peak reading of 1,538 and average of 787.7.

A ventilation system was installed there last summer, he said.

École Calixte-F.-Savoie, which had a peak level of 1,615 and average of 975.7, still has no ventilation system.

"There are no safety concerns for students or staff," said Thériault.

Furness encourages the government to 'be transparent' and install carbon dioxide monitors in every room in schools. In Quebec, CO2 monitors have been installed in all classrooms, and weekly air-quality reports are posted online. (Ben Nelms/CBC)

In Anglophone North, in addition to Lord Beaverbrook Elementary, Napan Elementary School was also tested. It had an elevated peak of 1,548 ppm and average of 631.4 ppm.

In Anglophone East, nine of 11 schools tested had elevated CO2 readings, including Bessborough, which had the second highest peak in the province after Marshview, at 3,186 ppm, and an average of 1,384.9.

In Anglophone West, 16 of 22 schools tested had peaks of 1,500 or higher, including Florenceville Middle School, which was highest at 2,873 ppm, with an average of 725.1 ppm.

Other 'spit and Scotch tape' options

Furness thinks the government should be doing more and sooner. "This isn't a long-term capital plan. This is a public health crisis."

He acknowledged some buildings, depending on their age and design, will be difficult or expensive to fix.

But there are easier, lower-cost ways to remediate air, he said — "basically a spit and Scotch tape basis" room by room, rather than installing a ventilation system for a whole building.

"It doesn't take long to punch a little hole in the wall and have an HRV [heat recovery ventilator] locally that pumps air into a classroom and takes air out of a classroom."

There are also non-ventilation methods to make school air safer, such as using Far-UV lights to disinfect, said Furness.

"Figure out ... what can be done quickly, cheaply, easily, because there are choices."

choices.

Results from 2022-23 testing will be made public this summer, according to Bell.

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